

REMARKS

REJECTIONS UNDER 35 U.S.C. § 102

Claims 11-13, 15, 22, 23, 25, and 26 were rejected under 35 U.S.C § 102(b) as being unpatentable over U.S. Patent No. 4,817,085 issued to De Prycker (*De Prycker*). Applicant submits that claims 11-13, 15, 22, 23, 25, and 26 are not anticipated by *De Prycker* for at least the reasons described below.

Independent claim 11 recites:

receiving a packet;
updating a probability distribution;
updating an optimal delay that is based at least in part on the updated probability distribution;
reading information in the packet and ascertaining therefrom a delay incurred by the packet in traversing the network;
comparing the delay ascertained to the optimal delay; and
delaying use of the packet to reconstruct a signal by a calculated amount of time sufficient to make the calculated amount plus the ascertained delay substantially equal to the optimal delay. (emphasis added).

Thus, Applicant claims updating a probability distribution, updating an optimal delay that is based at least in part on the updated probability distribution, comparing a packet's delay in traversing the network to the optimal delay, and delaying use of the packet such that the calculated delay plus the ascertained delay is substantially equal to the optimal delay.

Independent claim 15 similarly recites a dynamically updated optimal delay.

The Office Action cites *De Prycker* as disclosing the invention as claimed by Applicant in claim 11. However, *De Prycker* does not disclose updating a probability distribution and updating an optimal delay based at least in part on the updated probability distribution. The Office Action relies on *De Prycker*'s equation $T_2 = t_o + T_m$, where T_2 represents the overall delay, and states that T_2 is "inherently dynamically adapted by T_m ." There exists nothing in *De Prycker* to inherently suggest that T_2 is dynamically updated. In fact, *De Prycker* states that the

first packet DP0 is submitted to a total delay $T2 = t_o + T_m$ and that **all the following packets ... are subjected to the same delay**. See col. 4, lines 11-14. Figure 2 shows the “ $t_o + T_m$ ” calculation yielding $T2$ for the first packet. The same value of the delay $T2$ is shown in the figure for all subsequent packets. $T2$ does not change and is, therefore, not dynamically updated. Furthermore, *De Prycker* discloses that “said delay is so chosen that with a **predetermined probability** the errors in delayed packets are always less than a predetermined value” (emphasis added). See col. 2, lines 3-6. In contrast, claim 11 recites receiving a packet and updating a probability distribution. Therefore, Applicant submits that claims 11 and 15 are not anticipated by *De Prycker*.

Claims 12 and 13 depend from claim 11. For at least the reason that dependent claims include the limitations of the claims from which they depend, Applicant respectfully submits that claims 12 and 13 are not anticipated by *De Prycker*.

The Office Action cites *De Prycker* as disclosing the limitations of Applicant’s claim 22. Specifically, the Office Action cites column 6, line 30 of *De Prycker* and states, “the probability density function is generated in response to the first packet DP0.” Once this probability is generated in response to the first packet, it is not updated in response to subsequent packets. In contrast, Applicant’s claim 22 recites a probability distribution function **updated in response to receipt and processing of selected ones of each of the packets**. *De Prycker* does not teach or suggest a probability distribution updated in response to receipt and processing of selected ones of each of the packets as claimed by Applicant. Therefore, Applicant submits that claim 22 is not anticipated by *De Prycker*.

Claims 23, 25, and 26 depend from claim 22. For at least the reason that dependent claims include the limitations of the claims from which they depend, Applicant respectfully submits that claims 23, 25, and 26 are not anticipated by *De Prycker*.

REJECTIONS UNDER 35 U.S.C. § 103

Claims 1-10 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *De Prycker*. Applicant submits that claims 1-10 and 24 are not rendered obvious in view of *De Prycker* for at least the reasons described below.

Independent claim 1 recites:

a plurality of storage locations for storing packets received from a network;
a system for dynamically updating a probability distribution associated with network delays for plural packets; and
a CPU for calculating, based upon said dynamically updated probability distribution, a delay associated with each storage location, and for causing a packet in each storage location to be transmitted out of the storage location after an amount of time equal to the delay associated with the storage location.
(emphasis added).

Thus, Applicant claims an apparatus for dynamically updating a probability distribution associated with network delays.

The Office Action states that *De Prycker* “calculates the probability density function based upon the delay required for proper transmission through the network.” Whether or not *De Prycker* actually calculates the probability density function as stated in the Office Action, which Applicant does not concede, *De Prycker* does not teach or disclose **updating** the probability distribution at any point after the initial calculation. This concept of performing a single calculation of the probability density function is recognized as prior art in the background section of Applicant’s specification. (See Specification, page 3, line 19 – page 4, line 2). *De Prycker* explicitly teaches away from dynamically updating the probability distribution when it discusses

choosing a delay using a predetermined probability. See col. 2, lines 3-6. In contrast to *De Prycker* and the prior art, claim 1 recites **dynamically** updating a probability distribution. Therefore, Applicant submits that claim 1 is not obvious in view of *De Prycker*.

Claims 2-4 depend from claim 1. For at least the reason that dependent claims include the limitations of the claims from which they depend, Applicant respectfully submits that claims 2-4 are not rendered obvious by *De Prycker*.

Regarding claim 5, Applicant claims a CPU that is arranged to calculate, upon receipt of every Nth packet of data, an optimal delay beyond which a packet will be lost, the optimal delay being calculated using a probability density distribution that is updated upon the receipt of each packet. *De Prycker* is cited as disclosing that when a whole packet DPK does not arrive in time it is discarded (col. 4, lines 65-66). Whether or not *De Prycker* teaches the limitation cited in the Office Action, which Applicant does not concede, it does not teach or disclose calculating an optimal delay, upon receipt of every Nth packet of data, the optimal delay being calculated using a probability distribution that is updated upon the receipt of each packet, as claimed by Applicant. Therefore, Applicant submits that claim 5 is not rendered obvious by *De Prycker*.

Claims 6-10 depend from claim 5. For at least the reason that dependent claims include the limitations of the claims from which they depend, Applicant respectfully submits that Claims 6-10 are not obvious in view of *De Prycker*.

Regarding claim 24, the Office Action states that *De Prycker* does not disclose a signal processor as programmed to use a recursive algorithm. Applicant agrees that *De Prycker* does not disclose this limitation. The Office Action goes on to say that *De Prycker* does teach a system where the delay is calculated based upon a predetermined probability that the errors in delayed packets are always less than a predetermined value which is based on the network delay.

Whether or not *De Prycker* teaches this limitation, which Applicant does not concede, *De Prycker* does not teach or suggest a probability distribution function **updated in response to receipt and processing of selected ones of each of the packets** as claimed by Applicant in claim 22. Claim 24 depends from claim 22. Therefore, Applicant submits that claim 24 is not obvious in view of *De Prycker*.

Claim 14 was rejected under 35 U.S.C. 103(a) as being unpatentable over *De Prycker*. in view of U.S. Patent No. 6,259,677 B1 issued to Jain (*Jain*). Applicant submits that claim 14 is not obvious in view of *De Prycker* and *Jain* for at least the reasons described below.

Claim 14 depends from claim 11. *De Prycker* fails to disclose the limitations of claim 14 for the same reasons discussed above with respect to claim 11. *Jain* does not cure the deficiencies of *De Prycker*. Therefore, Applicant submits that claim 14 is not rendered obvious by *De Prycker* in view of *Jain*.

Claims 16-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over *Jain* in view of U.S. Patent Application Publication No. 2002/0191645A1 published by Lauret (*Lauret*). Applicant submits that claims 16-21 are not obvious in view of *Jain* and *Lauret* for at least the reasons described below.

Claim 16 recites a method of measuring varying delays among a plurality of packets, the method comprising:

receiving a first packet at a receiving gateway;
maintaining constant any synchronization error between a transmitting gateway and the receiving gateway by taking on an assumed and reasonable value of a delay said packet experienced in traversing a network; and
setting a clock at said receiving gateway to a value equal to a time stamp contained within said first packet plus said reasonable value. (emphasis added).

The Office Action states that *Jain* discloses a first delay, that represents the minimum travel time that a packet will incur in the network as it passes from sender to receiver, used for determining proper playout time for synchronizing real-time traffic. Whether or not *Jain* actually discloses the limitations cited in the Office Action, which Applicant does not concede, *Jain* does not teach or disclose maintaining constant any synchronization error between a transmitting gateway and the receiving gateway by taking on an assumed and reasonable value of a delay said packet experienced in traversing a network, as claimed by Applicant in claim 16. *Lauret* is cited as disclosing setting a clock frequency at an ATM receiver based on the difference between a received clock and a local clock. See page 3, section 54, lines 1-7. *Lauret* fails to cure the deficiencies of *Jain*. Therefore, Applicant submits that claim 16 is not rendered obvious by *Jain* in view of *Lauret*.

Claims 17-21 depend from claim 16. Given that dependent claims necessarily include the limitations of the claims from which they depend, Applicant submits that claims 17-21 are not obvious in view of *Jain* and *Lauret*.

CONCLUSION

For at least the foregoing reasons, Applicants submit that the rejections have been overcome. Therefore, claims 1-26 are in condition for allowance and such action is earnestly solicited. The Examiner is respectfully requested to contact the undersigned by telephone if such contact would further the examination of the present application. Applicants have included a copy of all claims in the attached index for the Examiner's convenience.

Please charge any shortages and credit any overcharges to our Deposit Account number
02-2666.

Respectfully submitted,
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